ITEMS OF INTEREST.

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Thoughts from the Profession.

HUMAN PHYSIOLOGY.

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(CONTINUED FROM PAGE 296.)

The albuminoid substances are not affected by the saliva, for their solvent is the gastric juice. Before digestion an albuminoid is termed a "proteid," and the digested proteids are named "peptones." Peptones pass through the walls of the digestive canal into the blood. The whole of the proteids are not digested in the stomach, but pass through the pyloric ring for further digestion in the intestines. Meeting the alkaline bile, they become alkaline and are finished by the action of the pancreatic juice; the resulting soluble peptones pass into the blood of the portal vein.

The saliva does not exercise any influence on fatty matter, neither does the gastric juice, and it is only after they have passed the pyloric ring into the intestine that their digestion commences. These changes consist mainly in their physical reduction to a state of emulsion, and all in this condition is absorbed by the lacteal. A small portion may undergo a chemical change, by which the glycerine and fatty acids are disassociated. The fatty acids, under the action of the pancreatic juice and bile are saponified.

The sum of the whole matter as here presented, is:—

Starchy matters are digested in the mouth and small intestine, under the influence of the saliva and pancreatic juice.

Albuminoid matters are digested in the stomach and small intestine, under the influence of the gastric and pancreatic juices.

Fatty matters are digested in the small intestine under the influence of the pancreatic juice and probably the bile.

Digestion then, as has been shown, is simply a solution. Indigestion, therefore, is due to some interference with the preparatory process of disintegration, or to some impairment of the saliva, the gastric juice, or the pancreatic juice. Instead of prescribing at random for this trouble, the true physician keeps these facts clearly in view and endeavors to arrive at a knowledge of what he would remedy, remembering, of course, that if the food taken be of an indigestible nature in itself, that then the digestive processes are not to blame for the state of indigestion. If the food is proper, his first step in cases of indigestion is to satisfy himself that mastication is thoroughly performed, and that the teeth are in perfect condition. Correction of wrong here may cause the troublesome symptoms to pass away without requiring any further medical treatment.

Imperfect disintegration may be due also to defective action of the stomach, the result of gastric dilatation, an abnormal quantity of gastric mucus, or an ulcer arresting the muscular movements.

In all cases of indigestion due to impaired disintegration, the only remedy is to so prepare the food as not to require disintegration, and to present it in that shape which cannot be rolled into a mass and covered by a tenacious mucus.

If disintegration be perfect, a cause for indigestion must then be sought for in an impaired digestion of amyloid material, or of albuminoids, or in an imperfect assimilation of fat.

These conditions must be carefully tested, the defective one accurately diagnosed, and the appropriate remedy applied. If the first is at fault, it may be corrected by increasing the flow of saliva and pancreatic juice; if the second, by inducing an increased secretion of gastric and pancreatic juices; and in case of the third, by stimulating the production of pancreatic juice and bile.

The large intestine is about five feet in length and three inches in diameter. The processes which occur here are comparatively of little importance. It receives the indigestible residue of the food as it is discharged from the small intestine.

The first division of the large intestine is termed the cæcum, and is situated in the right iliac fossa; while the last division is named the rectum. That portion which extends between these two is the colon, and is divided into an ascending, a descending, and a transverse colon, and a sigmoid flexure. The ascending colon passes upward to the under surface of the liver, and then turns at almost a right angle, passes directly across the upper portion of the abdomen, constituting the transverse colon, and then downward under the name of the descending colon, ending in the last division of the colon, the sigmoid

flexure, which is situated in the left iliac fossa. The sigmoid flexure terminates in the rectum.

At the lower portion of the cæcum is a tube from one to five inches in length, called the vermiform appendix. Its use is unknown.

The ileo-cæcal valve is situated at the inner and posterior portion of the cæcum and closes the opening between the ileum and the cæcum. The surface of the valve toward the small intestine is covered with mucous membrane having the full characteristics of the membrane lining the small intestine, while the surface toward the large intestine presents a true resemblance to the lining of the large intestine. Pressure from the ileum will open the valve, but pressure from the cæcal side will the more firmly close it.

The large intestine is covered by peritoneum, distributed in the following manner: On the anterior and lateral surfaces of the cæcum, ascending colon, descending colon and middle portion of rectum; on all the surfaces of the transverse colon and upper portion of rectum; on almost all of the surface of the sigmoid flexure. The lower portion of the rectum has no peritoneal covering.

The muscular fibres of the large intestine are arranged in a different manner than those in the small intestine. The external longitudinal layer, instead of extending over the whole tube, is arranged in three distinct bands.

The mucous lining of the large intestine is quite different from that of the small. It is paler, thicker, and has no valvulæ conivents.

The secretions of the large intestine are not endowed with any marked digestive power, and seem to serve only to lubricate the canal.

The undigested residue of the food gradually acquires the consistency of fæces and is voided from the system. These excrementatious remains consist of the portion of food unacted upon and material resulting from the breaking down of the system itself. Microscopic examination shows them to be composed of various vegetable and animal structures which have escaped the action of the digestive fluids, mucus, desquamated epithelium, and a few white corpuscles. The mean amount voided in twenty-four hours varies greatly according to circumstances, but has been estimated to be four ounces.

It is an established fact that absorption of nutrient substances will take place when introduced into the rectum through the anus. Life may often be thus maintained when the ordinary means of introducing nourishment are interrupted.

The motion of the large intestine is somewhat similar to that of the small, but far less vigorous, and the expulsion of fæcal matter is termed defæcation.

[TO BE CONTINUED.]

IS INORGANIC MATTER USED AS FOOD, ASSIMILATED.

BY J. F. SANBORN, TABOR, IOWA.

ED. ITEMS:—It would be interesting to ascertain if possible the exact physiological value of mineral substances taken into the system directly from the mineral kingdom. There exists a theoretical supposition to the effect that all mineral substances entering into the composition of the tissues of the body should be derived from vegetables or animals, because when mineral substances have passed through this preparatory stage they are endowed with "life force" which they did not before posses.

The universal use of common salt is certainly an exception to this rule; and are not such compounds as Syr. Lac. Phos. of lime exceptions?

We beg leave to suggest that Dr. Sanborn, of Tabor, Iowa, should kindly give his views on this matter to the readers of the ITEMS. LOUIS OFTOFY.

[The above card was sent by us to Dr. Sanborn, who replies as follows.—ED.]

The word *assimilate* is often used in a too indefinite sense for its true physiological meaning. It is derived from the Latin ad, (to) and similes, (like) and means to change the plasma in the blood into the tissues of the body; as, a muscle is assimilated from the nitrogenous elements in the blood, and in this sense we shall use it.

Digestion alone within the animal economy prepares the food for its absorption and introduction into the blood, and when duly introduced into the circulation becomes plasma, and is the material that the bioplasts absorb and change to the tissues as "formed matter;" and when the change has been fully accomplished, such plasma has become assimilated.

Crude materials, as found in nature as inorganic matter, are absorbed by the rootlets of our cereals, and elaborate the perfect seed, as the wheat berry; this, used as food, may be digested and fitted for assimilation. "O. S. W." says: "What is there in the Syr. Lac. Phos. of lime that is not in this condition? Phos of calcium is made from bones, and so is even one step further in the scale of assimilation than the phosphates as found in grains." Let us see: The grain has duly elaborated, not assimilated, the wheat berry from the crude plant food furnished it by the earth and air, and thereby becomes the normal food for man. Suppose one should have the wheat duly cooked, and should eat his fill three times a day for ten days, without taking any other kind of food. He might like to have a change, but would his life be endangered or his health impaired? Now, for a day or two, let him try the Syr. Lac. Phos. of lime and see what proportion of it will satisfy his desire for food; and how long he could subsist on it as a diet.

Anything that is proper for food can be used for a full meal without impairing health. Any of the inorganic elements or compounds will not do as much. The molecules of wheat contain gluten to nourish the muscles, sugar, starch and dextrine for the adipose tissue, and what

are known as inorganic elements to nourish the osseous structure. These last are elaborated by vegetables as truly as are the gluten, sugar, or starch, and, being organic, are digested and assimilated as normally as any other of the ingredients.

The composition of bone is:

Animal matter	30.58
Phosphate of lime	57.67
Carbonate of lime	6.99
Fluaride of calcium	2.67
Phosphate of magnesia	2.07
Total	99.98

We have no book at hand, nor the personal knowledge to give the chemistry of the Syr. Lac. Phos. of lime, but from the statement that it is made from bones, we conclude it is made by the action of lactic acid on bones; if so, the above chemical formula for bone structure, on being decomposed by the lactic acid, the carbonic and fluaric acids are dissipated in the air and are lost. The lactic acid has combined with the lime, forming lactate of lime, and, phosphoric acid. Now, if this is the result of the chemical action, what relationship the result is to bone structure is more than appears; and how such a compound can be assimilated into bone structure is equally obscure.

In the formation of the "Syr." by the action of lactic acid, the atoms of the molecules of the bone would be changed, forming a new compound, and this fundamental *physiological* principle underlies all normal vital action. By chemical change of the atoms of the molecules, and a rearranging of the atoms to form new molecules, the subject matter has lost all its life-giving force; it can be no more *assimilated* than so much inorganic matter taken from the earth, so that the Syr. Lac. Phos. of lime is of no more use for bone making food than an equal amount of Syr. made by pouring so much lactic acid on common carbonate of lime, and the addition of a little phosphoric acid—the latter is very destructive to the teeth. If this could be digested as other food is digested, there might be some plausibility in using it to produce bone plasma, to be used in building up the osseous structure; but even then we should much prefer the more natural mode of supply through the cereals. The same arguments were used in the July number of the ITEMS in our article on "Glucose." It was the change of the relationship and number of the atoms in the starch molecules to make the new compound that constitutes glucose, that was objected to. The starch, as found in the cereals, may be useful to nourish the adipose tissue, but the new chemical compound glucose can never be of use to supply the normal wants of the system, and will be rejected through the kidneys. Its habitual use by any one will probably be a fruitful source of that almost incurable disease, *mettetis diabetes.*

The primary design in the use of food is to sustain life by supplying the vital force to originate and continue the motion in the ever changing molecules of the matter that constitutes our corporeality. This increasing change of building up and tearing down of tissue, is the marked characteristic of animal life. It is essential to the originating of animal heat, and maintaining it in all climates, through life. The oxidation of the tissues, through the entire body, is the normal source of animal heat, just as truly as the oxidation of fuel that we put in our stoves is the cause of which the congenial warmth in our dwellings on a cold winter's day is the result.

It is high time we should abandon the idea that it is the oxidation of calorificent food in the lungs that produces animal heat. This old Liebig theory of the origin of animal heat has for years been passing away, and its shadow is becoming beautifully less, as the light from investigation is allowed to dissipate the mists of an over zealous chemical theory.

The grand ultimatum of this disintegration of tissue is brain force, which, like a sovereign monarch, rules and governs all the actions of our being. First, it sustains those changes that constitute life; and, second, it utilizes the break-down of tissue to produce a force that shall enable us to originate thoughts and ideas, and to bring about all those changes in the world that distinguish the works of man from those of nature.

This build-up of tissue is but accumulated resources, like money in a good bank. The take-down by oxidation is the source of the force that utilizes those resources in the accomplishment of life's great end, be it physical, mental or moral.

In the oxidation of inorganic matter (as a plate of zinc) we have heat and electricity evolved, which add to our comfort, and do our bidding like obedient servants, but such actions can never produce consciousness, thought, or intelligent independent action, unless directed by a mentality that has its source in connection with animal life.

Life force, life motion, vitality and mentality are not matter, but, like *force*, what can we know of them disconnected from matter? They are manifestations of force as truly as are light or heat. We are dependent on the sun for our varied manifestations of force on our earth, and vegetation is dependent on this force to originate its life motion in the molecules of its structure, and so dependent that when life motion is in its greatest activity a severing of the connection with its force supply (as the cutting of a limb from a tree) and its ability to continue that motion soon ceases, and death ensues. Vegetation is as dependent on its connection with its force supply (the earth) as the telegraph is on its battery for electricity, while in animal life, the supply is in the food eaten.

And here comes in the secret of our want of ability to control life and death; it is because we can not originate or continue this life motion except within certain limits, and subject to certain laws.

In vegetation this life motion becomes stored up in the seed as vitality, a latent condition of this life force or life motion. Under favorable circumstances this vitality in the seed will resume life motion in a new plant, and so life is transmitted from one generation to another.

Because inorganic matter cannot within itself originate motion, spontaneous generation can never take place.

If, from any cause, this vitality in the seed is destroyed, or is changed to life motion, and then is arrested, it can never be resumed—death is the result. This vitality in the seed is the normal source of supply for animal life to obtain life force to sustain life motion.

While the matter of the seed becomes the substance of the bioplasts, in the various tissues, the vitality of the seed, or the stored up life motion, becomes the life motion in the bioplasts. It is in this manner that life force is transferred from the vegetable to the animal kingdom, and by knowing these facts we can understand how the animal kingdom is dependent on the vegetable kingdom for its supply of life force.

The vegetable kingdom is the great manufactory where the inorganic matters of the earth are organized and endowed with life force from the sun, and furnished to the animal kingdom for its use.

All inorganic matter, as sodium chloride, (Na. Ch.) phosphate of lime, (Ca. P_2 O_5) carbonate of lime, (Ca. C O_2) or iron, (Fe) in order to contribute to the life force of the animal kingdom, *must* do so by obtaining their supply of vitality by passing through the vegetable kingdom. In the use of any of the inorganic compounds they are as dead matter, and can not in the least administer life force, for it is not there. If they are used, it should be borne in mind that they are tolerated and finally removed, at the expense of the living organism.

ANTI-EXTRACTION.

BY WM. N. MORRISON, D.D.S.

[Read before the St. Louis Dental Society, 1883.]

Yearly there are extracted, by the bushel, teeth and roots, firmly set in the jaws, susceptible of repair, and capable of performing a duty and service ten times greater than that of the best artificial substitutes. A patient with the toothache can not take a calm, sensible view of the situation; of the irreparable injury, not only through the loss of that member, but by the change of position the others will take, and the unavoidable loss of the use of its opposing fellow. Out of one hundred teeth extracted daily, ninety-nine should not be extracted, but should be carefully and painlessly cleansed from soft decay at the

margins (not over the pulp), and filled with some non-conducting cement, to be afterward filled more permanently.

There are many persons, mostly ladies, who wear jewels and pearls and expensive clothing to beautify their exterior, while they intrust their pearls of an inestimable value to the hands of the most inexperienced, cheap dentist, and get his cheapest wares at his cheapest price, and then go abroad and boast of the amount economized in their dental bills, when one glance at their faces, and one zephyr from their mouths are most convincing that their dental services were most dearly bought at the expense of their beauty and health. The worthy cheap dentist has a fruitful field, and can do an immense good if he would confine himself to legitimate cheap dentistry, without mentioning an arbitrary fee for gold work, not equal, in many cases, to half of what the material used would cost.

The patient, young or old, should be told how to brush and pick, and rinse his teeth, and this fact impressed upon him, that teeth decay only from the outside, and for want of proper care and cleanliness. Dentists make their living out of their patients' neglect and ignorance of the correct laws of hygiene, just as physicians do. With our advanced knowledge of the worth of good natural teeth, and the present improved instruments and facilities for sensitive cavities in all positions of the teeth, in a comparative painless manner, and the numerous materials for filling such cavities, each good in its place, there is no truth in the saying that any tooth or root can not be filled. All turn-keys, forceps and extracting screws as constructed to remove firm teeth or roots are barbarous relics of the Inquisition. For years I have extracted teeth or roots only when they were so loose they could be removed with the thumb and finger, and I most heartily wish every other member of the profession would adopt that rule. They would be gratified at the conservation and restoration nature can accomplish. There should be no artificial dentures made by the future dentist. The artificial leg and arm maker could increase his business with as much justice by recommending the amputation of all rheumatic and neuralgic limbs, by the aid of gas, and starting out his victims with his substitutes, which bear the same relation to the natural limbs that the best dental substitutes bear to the natural teeth—shortens his life by many years. Consider for a moment thirty-two natural teeth, in normal jaws, capable of being brought together with a pressure of four hundred pounds to the square inch upon a morsel of meat (tough Texas); then the involuntary swallowing of the juice, leaving the solid fibres dry and empty to absorb the secretions, like sponge, from the glands whose ducts open at that part of the mouth. The morsel so saturated with the normal saliva is almost digested without the action of the stomach upon it. Such persons rarely

realize they have a stomach. Then contrast with that the poor old receptacle of dyspepsia's remedies. The sallow complexion, hollow eyes, and hollow jaws, with artificial teeth half the size of natural ones, and only twenty-eight in number, resting on a spongy gum, instead of being anchored three-quarters of inch in the bone, covering the membranes and tissues with which the food ought to come in contact, brought together with feeble force in an up and down motion only. Mastication, in the true sense, can not be performed with artificial teeth. Little squares of meat are rolled around in the mouth, and may have a few holes punched into them, but are sent nearly whole into the stomach, thus compelling that organ to perform two offices—that of mastication as well as that of digestion. This is a subject the public have entirely overlooked; and the mass of dentists, if they have given it any thought, and know its direful results, do not exert their best energies to correct the evil.

Legislative enactments will not correct the evil so long as the physicians can extract teeth *ad libitum*, and dental shambles advertise that all their employes are dental graduates. In all State bills for the regulation of the practice of dentistry there is an exempting clause which states "Nothing in the bill shall prevent physicians from extracting teeth." The average physician knows no more about treating a case of common toothache than a last year's bird's nest. If he has a talent for surgery he will extract; if he is of the timid *materia medica* type, he will write a prescription and send his victim to the nearest drug store, never looking into the cavity of the tooth to see what produces the ache, which comes always from pressure on the pulp (or nerve), impacted food or gas from decomposed pulp tissue, confined in the pulp canal. If from the first cause, relief may be given by simply removing the food, cleansing the cavity, and closing it with a pledget of cotton saturated with sandarac varnish. If the ache is caused by the mephitic gases, an opening into the pulp chamber will give immediate relief. All the decomposed pulp tissue should be removed, and the canal stopped temporarily with cotton and creasote. If it is a case of abscess, open at the same time as a simple abscess on any other part of the body.

The same general rule applies to the children's or deciduous teeth. If they are carefully cleansed and kept free from decay, they will drop in their proper time as do the leaves in autumn. When the pulps are dead, and the crowns occlude against their opposing fellows, I snap the crowns off with excising forceps, and keep the roots ground down, but leave them in the alveolus as wedges, which increase the arch. More cases of irregularity of the permanent teeth can be traced to extraction of the deciduous teeth than to any other cause.

Now, as long as the law on this subject stands as it is, the very

point that should be protected is thrown open, and everyone is allowed to extract teeth, regardless of any knowledge on the subject. Make it punishable by fine for anyone to extract a firm tooth or root, and welcome every one or every instrument and material that will save teeth, and you will, by these means, promote health and prolong life.

THOUGHTS FOR OUR YOUNGER BRETHREN.

BY GEO. WATT, ED. OHIO STATE JOURNAL.

When a small boy it was our lot to fall from a height among weeds and bushes, and to be so hurt as to remain for a time unconscious. When but partially revived, being unable to move and bewildered in mind, we saw a number of spider webs which had been spun above and around us. To our depraved vision they looked like ropes, and our impaired judgment came to the conclusion that we were securely tied and totally unable to get out of the difficulty. Lapsing back into unconsciousness for a time, a new awakening found us able to take in the true situation, and to realize that there was nothing to do but to get up and go on with proper business.

Our condition then is an illustration of many of the incidents of practical life. A young, or possibly an older professional man, finds himself lacking in strength and energy, and he concludes that all things go against him, that he is tied down by the force of circumstances till he is practically helpless, when, in truth, if he will but arouse himself, he will find that mere cobwebs are holding him, and that his own energy is the only element lacking to insure professional prosperity. Let all, especially the young, wake up to active life and duty, and all will go well. Let no hour pass unimproved. Sleep soundly, when sleep is needed, then work, or study, as if contending for a prize. Let there be no waking hour that you do not learn something, or do something useful. We often find a young professional brother expressing a wish that he possessed the knowledge of Dr. Blank, while we can well remember when Dr. Blank's attainments were inferior to the present acquirements of his admirer. But *wishing* will not bring him up to the level of Dr. B.; yet, industry and energy will. Let no one permit himself to be tied down by cobwebs. Break away from everything that holds you back. Mark out a course of study and experiment, and pursue it to the end—not a course that would be nice to follow, but one that you will pursue as certainly as life and health permit.

DR. KEMPTON, of Illinois, says: "The oxyphosphate of zinc has a large field before it." Judging from the steady increase of its sale, we should think this was the case. He adds: "I have, in some cases, seen it withstand the wear of two years' time." We can say quite as much.

AN UNUSUAL SURGICAL CASE.

Through the kindness of Dr. Mears we recently had the opportunity of seeing the result of a rare if not unique surgical operation. The case was that of a young lady, 20 years of age, who had been accidentally shot, when only two years old, by a playfellow. The charge consisted of small bird shot, a few of which were still present and could be felt underneath the skin at the side of the neck; the gun was within a few feet of her face when discharged, the mass of the contents passing directly through the left side of the face, the direction being from before backward and outward. The greater part of the left cheek was torn away, including the zygoma, the malar bone, and part of the superior maxilla. Profuse bleeding followed, and a physician who was called in declined doing anything for the little patient, as, he said, she was sure to die. Her parents being intelligent people, cleaned the wound and applied pressure, with the result not only of stopping the bleeding, but also of healing the wound, after a number of pieces of bone had been discharged. The result, however, as regards the functions of the jaw, was not very good; ankylosis followed, and the jaws were bound together by a firm band of fibrous structure. For eighteen years she had been unable to eat food which required mastication; the teeth were prevented from developing, except a few which grew to one side. The front teeth were rudimentary, and she stated that she had worn them away trying to push food into her mouth. Her voice was good, and she had just finished a collegiate course to fit her for teaching. She sought relief from the ankylosis, in the hope that the defective denture might be remedied in appearance, at least, by a double set of artificial teeth.

Dr. Mears found that the jaws were united on the left side with a firm band, fibrous or osseous, and that only a slight lateral movement existed at the articulation; there was also defective development of the bones of the left side of the face. The cicatrix on the cheek had contracted so as to draw away the lower lid and produce extensive ectropion; and the cornea had become opaque either from the original injury or from exposure, so that the function of this eye was destroyed. The operation was completed at one sitting. A plastic operation was performed, to relieve the ectropion; and, in order to prevent unnecessary disfigurement, instead of making the usual line of incision to resect the jaw bone, the knife was then carried through the cicatrix directly outward toward the lobe of the ear; the ascending ramus of the jaw bone was then divided with the saw, just below the coronoid process, and the portion of the bone above this was removed from its socket. A chain saw was then introduced into the mouth, and the vicious band of union was divided, giving at once considerable motion to the jaw. A number of defective teeth roots and stumps were re-

moved, twenty-two in all; six teeth in front and on the right side were found to be good, and were allowed to remain. When seen, six weeks after the operation, the wound had healed, except a small superficial spot. The ectropion had been corrected; she was able to completely cover the eye with the lids. The jaw could be opened over an inch, and admitted lateral motion for chewing. She is now being fitted with artificial teeth; her appearance has been immensely improved. Before the operation she was obliged to constantly wear a black patch over her eye, which is no longer necessary; a veil is worn when she is out on the street, which sufficiently hides the cicatrix.—*College and Clinical Record.*

SAVING PULPS.

A QUEER PROCESS.

Dr. F. A. Hunter, in the Missouri Association, said: I am very glad indeed that this subject was so enlarged upon the program as to include the capping and treatment of exposed pulps. I have spent a great deal of time experimenting upon the subject, and with a most marked degree of success. I do not hesitate to say, and I say it boldly and without fear of contradiction that, by my method, I have succeeded in saving every exposed pulp that has come my way; yes, even though the pulp may be suppurating and the pus welling up in volumes, I shall save it. I can save even *remnants* of pulps, be they never so small.

Some years ago—I can't just recall how long; at any rate it was about the time of the introduction in our city of the English sparrow, I began experimenting with a capping. It is so good and efficacious that your patients will bless you; you become happy in consequence, they leave your office showering down upon you the highest enconiums, and—never come back again. Some one remarked during the course of the discussion, not to make pressure upon the pulp. Now, I say that pressure is the very element upon which a great deal of the success depends. Drive your capping down as hard as you can, and, as Siddal says, "You have the pulp in a tight place." Now, as to the composition and mixing of my infallible capping. It——

VOICE. Write it on the board.

DR. HUNTER. That is probably best, as many, no doubt, will wish to experiment for themselves, and here it is:

R Sorgum Molassum, 1 pint.
Droppum English Sparrow, 1 pound.

Mix into a stiff plastic mass and apply. I must confess that though my success has been fully equal to 98 per cent of all cases with this capping, I have never experimented with chickens. I have no doubt but that their droppings are equally advantageous. Dr. Hunter here took his seat amid storms of applause.

ENCOURAGEMENTS FOR WORK.

BY DR. C. A. BRACKETT, NEWPORT, R. I.

The results of right efforts are cumulative. Practice enables us to do our work better and more easily; experience makes us wiser; acquaintance with annoyances and difficulties should teach us how to remedy them, or to bear them with patience. Then, too, the material results of our work are cumulative. The prosperous man is able to note each year a gain in this respect; and he should find that he can from time to time command new comforts, new advantages, new blessings. Anything of this kind that has been looked forward to, and struggled for, and earned, has a peculiar zest in the realization. Something to work for is an essential element of happiness. In this particular we may be perpetually favored; and as step after step is accomplished we may reap corresponding increments of satisfaction. If we but come into their possession in the right way, all the good things of this world are given for our enjoyment.

A lively sense of appreciation of blessings is in itself one of the chief. A visitor at an almshouse met there a poor old woman who had suffered the loss of friends, property, home, health, everything that we are accustomed to look upon as making life desirable; but she was filled with a spirit of genuine thankfulness. "Yes," she said, "I have indeed lost and suffered much; but bless the Lord, I have two teeth left, one in each jaw, and they meet each other."

We are surrounded by a world of beauty and blessing if we will only open our eyes to see and our hearts to receive.

> "And this our life, . . .
> Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in everything."

The dentist is blessed in that his work is so directly with people, and so largely with the better class of people in the community. He has an opportunity to contemplate many of the pleasanter and nobler aspects of humanity, and by them he should be himself cultivated and refined. Our burnishers, used constantly upon gold, come to reflect something of the nobler metal. We ought not to be less alive than cold steel to improving influences. Happy the man who so cultivates his better nature that, as he goes through life and gains added experience, he grows more gentle, more appreciative, more considerate, more charitable, more tender; who looks upon the world in a spirit of optism, as being alike more satisfactory to himself and more just and true to the world; who does his work in his time, and, when his turn comes to resign, resigns gracefully; who is content with the fact that however large a place he may have filled in the world's affairs, the vacancy left will be of the same size that is shown by withdrawing a needle from water, and that even if he is a king, the proclamation will be: "The

king is dead; long live the king!" Webster said truly: "One may live as a conqueror, a king or a magistrate; but one must die as a man."

May we quit us like men.

> " So live that when thy summons comes to join
> The innumerable caravan which moves
> To that mysterious realm where each shall take
> His chamber in the silent halls of death,
> Thou go not, like the quarry slave at night,
> Scourged to his dungeon; but, sustained and soothed
> By an unfaltering trust, approach thy grave
> Like one that wraps the drapery of his couch
> About him and lies down to pleasant dreams."

So live that at the end you may be able to say: "I have fought a good fight; . . . I have kept the faith." "I have finished the work which thou gavest me to do."

So live that you may hear the benediction: "Well done, good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things; enter thou into the joy of thy Lord."

Dr. Brown-Sequard's Experiments with a Monkey at the College of France.—The vivisections at the College of France have attached wide notoriety. Dr. Brown-Sequard, in justification of his conduct, has thought fit to make a speech describing the cause and ultimate result of his classes. The professor said that he had recently been attempting some interesting experiments of partial anæsthesia by carbonic acid. For this purpose he had chosen young monkeys as subjects, their physical conformation being more nearly akin to that of man. By this system the doctor deadens all feeling for at least twenty-four hours without danger to the patient, and his anæsthetic affects only the sense of feeling. The young monkey who recently caused such an outburst of compassion had been anæsthetized by an injection three days previous, and the doctor had then made a deep incision on the neck, which the animal had not even noticed. The incision had since been sewn up, the animal eating and playing meanwhile without the slightest show of pain. From the result obtained on the monkey Dr. Brown-Sequard is sanguine of practicing upon man with equal success. The professor asserts that the anæsthetic suppresses not only all pain during surgical operation, but also for twenty-four hours from its administration; therefore the benefit of such a discovery is self-evident.

This system offers, besides, an additional advantage, from the fact that the eminent surgeon only anæsthetizes the part to be operated upon, leaving perfect freedom to the patient.

THE OTHER SIDE OF THE BRAN QUESTION.

BY DR. J. J. R. PATRICK, BELLEVILLE, ILL.

Does the habitual use of superfine flour, or the use of any of the cereal grains deprived of their bran or husk, tend to weaken the structure of the human teeth?

The advocates of "feeding the teeth" *on the brown bread plan* may save much valuable time, and find a solution of the question by considering the chemical properties and construction of a grain of wheat.

Bran proper is the external rind or skin represented by the five coats; it consists of woody fibre or lignine, and is coated with a shining layer of flint or silica, which protects the body of the grain from the action of the atmosphere; and unless its continuity be broken the gastric juices cannot act upon the starch and albuminous matter contained in the cells of the grain. Now the albuminous layer which adheres so tenaciously to the five coats is really the only bone of contention, not only with the miller in a pecuniary sense, but with the brown bread philanthropists. This albuminous layer is made up of cells, the walls of which are made up of cellulose, and the thicker the cell wall for the same size cell, the less nutrition there will be, (for cellulose is indigestible) and that which is contained within these cells is albuminous matter; a nitrogenous compound which is made up of the proteinaceous alimentary principles. This albuminous layer contains no starch grains, but holds in its cells from eight to fifteen per cent of the albuminous matter of the whole body of the grain, for the interovular spaces which surround the starch grains in the hexagonal cells are filled with albuminous matter, and fully eighty-five per cent of the albuminous matter of the whole grain of wheat is contained in these hexagonal cells.*

Now if the bran, including the albuminous layer, were thrown away,

*If a quantity of superfine flour be mixed with a quantity of water and kneaded, the particles will cohere and form a smooth, elastic and tenacious dough. If this dough be placed upon a sieve, or on a piece of muslin stretched over a vessel, and worked with the hand under a stream of water, the water will become milky and pass through into the vessel. If this process be continued until the water becomes clear, and the milky water in the vessel becomes clear by standing, a white powder will be found at the bottom of the vessel. This white powder is the common wheaten starch. The white, sticky substance that remains upon the sieve or muslin is called gluten, which contains the nitrogenous or tissue-forming elements of the grain; starch being the non-nitrogenous or heat-producing portion of the grain. Starch is found in most organic combinations, and as it is an important article of commerce, extensive manufactories for the production of starch exist in most civilized countries. The principal vegetables from which starch is obtained are—potatoes, maranta-indica, beans, sago palm, Iceland moss, peas, wheat and Indian corn. Now as one hundred parts of wheaten flour yield twenty-five per cent of gluten, this valuable portion of the grain is not thrown away, but is mixed with a double weight of flour, the paste rolled into long strips drawn into tubes, or made into granules, and is known in commerce as macaroni, sago, and vermicelli. People who use these preparations of vegetable gluten extensively lose the desire for animal food. Query:—If brown bread will perform wonders in stopping the tendency of teeth to decay, what ought we to expect from the use of macaroni, which is charged with seventeen per cent more of the "tooth producing elements?"

the loss of the nitrogenous matter would be less than fifteen per cent, and the rest of the grain would contain more of the plastic elements of nutrition or the nitrogenous or flesh-forming elements of food than rice or most other grains contain, and the consumer could very well make up the loss in volume, and then not eat as much of the starches or non-nitrogenous heat-producing elements as the rice eating nations do to obtain the same amount of nitrogenous compounds. Now it must be remembered that these tissue-forming elements are not found in the bran or husk of the grain, and the presence of these bran coats in flour impairs its value for food, for a grain of wheat, uncrushed, will pass through the whole length of the alimentary canal unaffected by the gastric juice, so that there is a great waste in using imperfectly pulverized grain of any kind, as the husk or bran partially protects the nutritive portion that adheres to it from the action of the gastric juice; and where the bran acts on the intestines as an irritant, either in a greater or less degree, so does it hasten the passage of the food through the canal in a partially undigested condition. There would therefore be nothing gained in the use of the husks of the grain excepting where a laxative was indicated. Now the ligneous and silicious layers which form the cells and coats of the grain are insoluble, and however fine they may be pulverized, or however perfectly they may be cooked, when eaten either by man or beast these substances will be found in the excrements of the animal unchanged.

If we had to subsist on eggs alone, we should, in order to satisfy the requirements of nutrition, place ourselves in the position of the chick and consume the shell as well as its contents.*

But inasmuch as our food is made up of a mixture of animal and vegetable, and the vegetable consisting chiefly of seeds, fruits and roots—a class that hold in store large quantities of nitrogenous matter—we can very well spare the husks of wheat, including the albuminous layer, for the nutritive salts contained in our animal food alone would more than compensate their loss. Take for instance the proteine compound of milk, (caseine) which contains sulphur, besides the four elements—carbon, oxygen, and hydrogen, and is remarkable for the large quantity of phosphate of lime it holds bound up within it.†

And when we reflect that all the animal tissues are evolved from the nitrogenous elements of food (albumen, fibrin, caseine, legumin, and

*The body of an egg contains neither phosphoric acid nor lime; it was necessary, therefore, that nature should provide means of furnishing both these substances, which it does at the expense of the shell, which becomes thinner and thinner as the process of incubation progresses, until the living embryo appropriates a sufficient quantity for the formation of its bones. Part of the albumen combines with the shell for this purpose, and another portion forms the feathers.

†If a persistent decomposition of the teeth can be arrested by the use of bran, or shorts, or brown bread, great caution should be observed in the use of cheese.

gelatin), it follows that animal food furnishes a larger proportion of the phosphates of magnesia and lime than is found in vegetables.

It is very natural to suppose that the primitive history of so important a plant as wheat would be known, but such is not the case, for its cultivation is of great antiquity; but enough is known of its origin to classify it as one of the primitive grasses of central Europe, and from which all the many varieties have been produced by cultivation. The early history of the many races of people on the continents of Asia, Africa, Malayo-Polynesian, Ancient Mexico, Central America and Ancient Peru, shows that these people were without wheat. The ancient Britons, at the time of the Roman Invasion, and the many races of men on the North American Continent before the advent of the European, were all strangers to this grain.*

One hundred years ago it was only the wealthiest people in Europe who enjoyed the occasional luxury of wheaten bread, and the masses of the people lived on small allowances of oats and barley; hunger was always present to the minds of the people; even one hundred years ago the United States did not produce enough to make bread for its own people; whereas, we now export annually over 300,000,000 of bushels, a larger quantity than was produced on the entire globe at the time our forefathers were signing the Declaration of Independence; and it is only since we began to export our surplus food that the world has really had enough to eat. The struggle of civilization has been to get rid of the husks, but as time rolls on the course of events become contradictory, for white bread has become the food of the poor, and brown bread has become the luxury of the rich.—*Trans. Ill. Society.*

ORGANIZATION.

BY W. H. ATKINSON, M.D., D.D.S., NEW YORK CITY.

To comprehend what organization is, it is necessary to understand organs, elements of organs, and the mass out of which these elements take their origin, and also to be made acquainted with their behavior in building up and maintaining the system of organs which we denominate the organization. The human body is the special organization with which we, as professional men, have to deal; and as it is the embodiment of all the organizing changes known to take place in planetary bodies in general, we may be justified in studying the foundation principles of organic production, growth, maintenance and destruc-

*"Seeds of wheat retain their vitality from three to seven years; the stories of 'mummy wheat,' which are said to have germinated after remaining thousands of years in the tombs of Egypt, are now discredited; the cunning Arabs have even supplied credulous travelers with mummied maize grains and dahlia tubers, neither of which were known before the discovery of America."—American Cyclopædia, vol. 16, page 587, 1881.

tion, not only in the recognized organic kingdom, but that heretofore denominated inorganic, as these all bear a part in human functional activity. The principles and laws, with which we become acquainted in our studies of the mineral, animal and vegetable kingdoms, are but the displays of *power* regnant everywhere in seriated order whereby classification becomes possible, and through which alone it can be known. Thus the predominance of mineralistic character entitles us to classify the body as mineral, the predominance of vegetableistic character sets the body down as vegetable, and the predominance of animalistic character decides its distribution to the animal kingdom The unitary example of the mineral body is a *crystal*, that of the vegetable the *cell*, and that of the animal the *corpuscle*. The predominance and sub-dominance being the special distributive display of energy in quantity and kind, by which we attain classification of planetary bodies, will teach us that that these are but aspects and relations of something more occult than a crystal, cell or corpuscle.

This occult precedent of organization, the measure of which distinguishes the various bodies and their admixture, is a mode of energy denominated affinity or kindred—the various degrees and numbers of which lay the foundation for all classification of simple and compound bodies.

The unitary example of a simple body is called an atom, combinations of which produce molecules, whose irregular aggregations or massing produce granules, regulated massing of which presents us with corpuscles; and these in combination, under the guidance of *type*, present us with tissues, organs and system, according to the typal demand of *evolution* or *parentage*. All of these are examples of compound bodies.

Evolution holds the dominion throughout the monera and the lower forms of the molusca. Parentage holds the dominion in the higher molusca and throughout the vertebrata, at the head of which we find the one genus and one species—Homo. * * * *

Two semens coming together under favorable conditions, produce a germ, by the confluence of the awakened potencies of giving and receiving of the measures of energy, differentially held in the semens.

A germ is a chaotic body of organic possibilities, and is differentiated into the tissues, organs and system by the ripening of the evolutionary process, under the guidance of the blended types of the organisms which secreted the semens. The first perceptible change occurring in this chaotic mass consists of a regulated series of molecular movements, which result in the production of protoplasm.

Protoplasm is the primal tissue through which and out of which every form of tissue, heretofore recognized or yet to be revealed, takes origin and receives maintenance. The difficulties in the way of teach-

ing the depths of organization, or any other special law out of demonstrable knowledge, are manifold,—viz., first, *ignorance;* second, (and principally) *bad nomenclature;* and, third, *poor methods of statement.* Multiplied examples of this barrier to rapid advancement would here be in order, but a few must suffice, by reference to the stilted character of the methods of pseudo-scholars figuring in fashionable literature so prevalent in these times of "scientific instruction for the people," as well as for would-be professionals, namely, "di-hydride of oxygen," for plain *water;* "di-oxide of carbon," for *carbonic acid gas*, etc., etc.; without any hint at an effort to help those most in need of assistance. Thus technicalities smother the intended instruction in the literature referred to. The word *smother* itself is pregnant with instruction to all who thoroughly comprehend its synthetic significance. A smothered function is one in which the arrest of performance is partial or complete, according to the degree of minification in weakening or arresting the currents of functional energy leading to debility, sickness, or *death* of a portion or the entire organism.

Organisms built upon a well balanced set of currental affinities, whereby molecules, granules, corpuscles, tissues, organs and systems most nearly meet the demands of typal conformation, are in condition to conspire to the fullest expression of the various functional requirements in each as reciprocal parts of each other, and the whole organism in performing the purpose of their existence. Completeness of growth of all the parts conspires to fullness of proportion and purpose of the whole.

The oneness of the manyness of an organism is said to be the governing or regulating power, when reference is had to the acts of the body as a whole. In the human being this urge or exercise of power is called the *will;* but when the attempt is made to analyze the will, it is found to be a resultant of something still more occult than the mass power known as will. Therefore, the will as a unit of exercise of power is made up of yet finer wills or smaller powers, whose trysting places are in still smaller bodies than the system, organs, tissues, corpuscles, granules or molecules of which the body consists. Thus the organism may be said to be much like a clock; the spring of which represents the will, or moving energy of the whole machine used to measure time. The spring is made of iron, which is one example of elemental bodies classed as atomic. Iron is so lowly endowed by will power as to display it only in its coherence, togetherness, or statism. When iron is changed to steel, it becomes endowed with the capacity to be *tempered*, as it is called, by which it attains stiffness, stubbornness, *will;* which it retains even to breaking rather than yield to opposing energy in greater measure than that by which it is endowed. Just here we are on the borderland between physics and metaphysics, and shall have to be very dis-

creet if we do not wish to lose the thread by which we trace emotions to motions in bodies sensuously cognizable by the exercise of consciousness, denominated *intellect* (in-tel-lect). That which is called will in the system is called instinct in organs, and impulse in the finer bodies known as tissues, corpuscles, molecules and atoms. We are now at the very foundation of the process of constructing functioning (or working) bodies. Let us now ask, first: "Have atoms power to accept or reject impact of organizing energy?" Second: "If so, is it possible for them to embody a less or greater measure of organizing energy than is indicated in the lay-out or plan of the body proposed?"

Purpose (design) acts in proposing an organism, in giving it characteristics of form, size, simplicity or complicity and use, and *must* precede the operation of building or construction of a functioning machine. This purpose is the *involvement* that lays the foundation and marks the limitation of evolution, which in turn becomes the forerunner of parentage.

These are the three principal appearances (phenomena) pertaining to organisms or existences. These may be called, first, *is* (being), second, *may be*, and third, *must be*.

The first or perceptible existences are mass motions. The second are organic motions, and the third are tissual, corpuscular and molecular motions. Evolution *must be*, parentage *may be*. Solar glintings produce the stalks, stems or woody fibre of vegetables; as they lay the foundation for the ganglionic nerves in animals. Star glintings produce the pith or analogue of nerve in vegetables (and the cerebro-spinal system of nerves in animals), thus being the basis of growth to bud, cambium and pith, or the so-called medulla of the vegetable kingdom. The universe is an organism without a provable centre. Solar systems are organisms with demonstrable centres, limitedsurfaces, or interregna or betweenites, acting under a prescribed set of opposing and concurrent motions.

As before stated, crystals represent the mineral kingdom, cells the vegetable, and corpuscles the animal, disintegrations of which lay the foundation for possible reproductions. These disintegrative or unbuilding acts are examples of predominance and sub-dominance of motions arising out of their source in emotion. The result of emotion in its simpler manifestations is involution, which displays itself in the production of bodies (suns, planets and inhabitants of planets) by evolution, all of which are regarded as sexual, or having the plus and minus quantities of energy so balanced as to defy detection as to predominance of plus as masculine and minus as feminine in the functions they perform. In planetary inhabitants this ambiguous presentment of functioning power holds the dominion in the mineral kingdom, and about half of the vegetable and animal kingdoms as before hinted.

When we have studied these laws as displayed in crystals and the monera, we will be prepared to take up the line of investigation suggested in this paper by studying the processes of germ production and parentage in general, which will lay a sure foundation for the understanding of the concurrent activities denominated physiology. As the human body is a product of a germ thus attained, it will now be in order to investigate derangements of functional activity, which has been denominated pathology.

Pathology, as studied and recorded, is unscientific, empirical and destructive. It is so involved in misapprehension, arising out of assumption of knowledge *not* held, that it will be cheaper to lay aside all text books on this subject and begin *de novo*, or upon the suggestions in this paper, to those of sufficient earnestness and clarity of perception to catch the animus of these mere hints at construction, maintenance and destruction of organisms suggested in it.—*Trans. O. D. S.*

SOME EVILS AND THEIR REMEDIES.

BY WILLIAM D. KEMPTON, M.D., D.D.S., CINCINNATI.

There are certain evils in our profession and its literature that need only to be mentioned to be deprecated. They are, however, so deeply ingrown that in their removal the knife of the surgeon must be used with the utmost caution and guided by the most consummate skill.

One of these evils is *verboseness*. There are articles published and addresses made that remind one forcibly of "a few grains of wheat in a bushel of chaff." The writers occupy page after page in a dreary attempt to say something, but they so muddle and confuse everything that their productions are frequently skipped after a partial perusal. They are seldom read to the end. These bores do harm, indirectly. They occupy the time of our societies and the pages of our journals, and thereby discourage others from attending the meetings or reading the journals.

Another evil is *superficiality*. There are some men who are fluent speakers, but whose remarks display an innocence of the first principles of pathology, natural philosophy, etc. These persons are a positive injury to the profession, for their remarks, being published in the proceedings of the societies, are read by some practitioners that are so deficient in knowledge that they are not capable of detecting the errors expressed, and so are influenced in their practice, to the detriment of their patients.

Still another evil is *zeal without knowledge*. When those affected with the trouble resort to some new plan of treatment, or make a discovery of any kind, they rush into print before they have had time to ascertain the results of such practice, and try to show that it is destined to prove

a boon to mankind—to revolutionize the practice of dentistry, and all that sort of thing. These are the men that go wild over new things; that indorse new preparations and appliances without taking time to investigate their merits, and frequently through their recommendations old, well tried and reliable preparations are cast aside to make way for new poor ones.

Another evil is the *learned but unskillful.* There are some men to whom it is a pleasure to listen, whose utterances evince a thorough knowledge of those great principles that underlie our profession, whose thoughts are embodied in language at once terse and lucid, whose opinions are quoted as authority, and yet in their practice they lack that innate skill, that delicacy of manipulation so essential to the success of an operation.

Another, and by no means rare evil is the existence of a class of practitioners who, by their *ignorance* and *unskillfulness,* play such sad havoc with the teeth of their patrons, and so disgust them with operative dentistry that they advise their friends to have all their teeth extracted and get a new set that will look better than the natural ones and will *never ache,* and so the manufactories of China teeth increase and multiply on the face of the earth.

These are some of the evils for which remedies are demanded, but we must remember that reforms are of slow growth, and to accomplish anything we must each work patiently like the little coral, and while we may not see much improvement in our day, posterity may rear a grand and enduring structure on the foundation that we have laid. Let us examine ourselves and see if we are subject to any of these evils. If verbose, let us study a concise style and distill and double distill our productions, for scientific papers, like medicines, should be presented in as concentrated and palatable form as possible. We must bear in mind that our hearers seldom take the pleasure in listening to a long-winded address that we do in preparing and delivering it, and that we may be imposing on good nature in expecting them to listen. If we find that we are deficient in any branch, let us perfect ourselves in it so that we may not promulgate erroneous ideas. But while we are thus careful let us not go to the other extreme and say nothing, for fear that it is not worth a hearing, for there are men that could impart many things who remain silent for fear they could not relate them in a way that would be acceptable.—*Trans. Ohio Dental Society.*

A Plattsburg (N. Y.) dentist, recently received by mail an order for a set of teeth, which reads as follows: "My mouth is three inches across, five-eighths inches through the jaw. Sum hummocks on the edge. Shaped like a horse shoe, toe forward. If you wish me to be more particklar I shall have to come thar."

THE FIRST PERMANENT MOLAR.

BY DR. C. R. BUTLER, OF CLEVELAND, OHIO.

It seems rather a peculiar view that is taken with reference to the first permanent molar, that there should be so much time and discussion and argument with reference to what shall be done with it, any more that with any other tooth in the mouth. It is well known that there is a sort of Boston and New York, or Boston clan and a New York clan, that are constantly warring about this first permanent molar. Now, it is a thing I very much regret should have been started in the Ohio State Dental Society. What are we here for? Our friend belonging to the general profession, it seems, has given us one of the best intimations of what we are striving for, no matter whether we are physicians, surgeons in general, or dealing in a specialty, or having to do with a specialty in medicine. We are all striving to see how much we can do for the amelioration of our fellows from their physical deformities and sufferings. Now, I can see no consistency in trying to get around some way to sacrifice one tooth in distinction to another. As dentists, it seems to me that it is our duty to try to save them all; and that is all we can do—is to try. Why labor to see whether we can be justified or warranted in any shape or manner in sacrificing one finger, saying that we can get along with three, because it is a little more effort to cover, and takes a little more of a glove, or a mitten to cover the whole hand than it would if you took that much off. There seems to me to be about as much consistency in one as the other. With our best efforts, and best skill that is at the present time known, and probably will ever be developed, we will only be able to save humanity from the loss of some portions of their members; and it seems folly to be spending time in seeing whether we can possibly get along without a part of it until it comes to an absolute necessity that it should be sacrificed, and then do it the same as we would amputate a limb, or extirpate an eye, or anything of that kind which must be done. But the idea of anticipating these things, and inquiring what you would do under a supposable case, that does not teach us anything. To ask Prof. Taft what he would do to a first permanent molar that had an exposed pulp, he answers truly when he says, "I don't know; but if you would bring the case to me I would then decide what I would do." Professor Taft would look the matter over, and perhaps tell you right away what he would try and do. It seems very foolish to be talking in this sort of a random manner, without anything to guide you really, only myths. There are many cases that might be cited, where the loss, or defectiveness of the crowns, of these first permanent molars are a great injury to the incoming teeth. Now, there are many cases where all these molars are wanting, or were extracted, and no effort made to

preserve the substance of the crown for occlusion. The incisors are very much displaced by the force of occlusion upon them, so that it is not the loss of these first permanent molars only, but the damage that is done to the other teeth that are illy able, at that time, to sustain this pressure. Perhaps the bicuspids are not sufficiently high to give the proper bearing; and if not, it would interfere with the proper eruption of the second molars. There would not be room for them to project through the gum, so as to give anything of a crown. But this is one of those supposable cases that are not to be appreciated or comprehended without the case actually before you. It seems that we should endeavor to enlighten ourselves so as to be able to save the teeth in our efforts to serve our fellows.—*Trans. O. D. S.*

HOT WATER.

BY DR. W. E. DRISCOLL, BEDFORD, IND.

ED. ITEMS:—Your editorial on "Our Drinking Water," in your August ITEMS has much more of importance and truth in it than I am thinking it will receive credit for. There are thousands of intelligent people who do not know that warm or hot water will quench thirst in the thorough and satisfactory manner that it will. A course of treatment at Hot Springs, or a sojourn in south Florida, brings a revelation to such, however. They learn that the discomforts of hot weather are greatly aggravated by drinking cold water. Some invalids, after such an experience, shun ice water, ice cream, and iced drinks and edibles, as religiously as the Mohammedan does pork. In fact, they find nothing much worse for their "stomach's sake," and, consequently, the whole system. A robust person with an abundance of vitality and animal heat, may experience no immediate inconvenience from the use of iced articles, yet it is worse than playing with fire. Avoid iced drinks is as good as the advice, "Keep your mouth shut, keep your feet warm, your bowels regular, etc." The neglect of these maxims looks like a small matter, but really it hastens the death of thousands annually.

Dr. F. Y. Clark, says: If you try the experiments (of tooth decay) out of the mouth, you get unnatural conditions; the experiments in the mouth would be entirely different. If we try experiments upon teeth out of the mouth, we arrive at nothing. The living portion of the tooth is changed very much by its removal. If we could magnify enough a whole tooth, we would see it a perfect mass of mesh-work; in this is the fluid which we call protoplasm, and that is what the germs are after. Dr. Miller has shown conclusively that they work way up into this mesh-work. They do not "*eat*," because they have no mouths; they are plants, not animals, and they live by absorption; they absorb protoplasm and the lime is disintegrated; that is the whole thing.

PRACTICAL SUGGESTIONS DURING DENTITION.

BY GUSTAVUS NORTH, A.M.,D.D.S., SPRINGVILLE, IOWA.

How could we expect a tree to grow and bring forth fruit, if deprived of the elements that nature provides for it? Deprive it of the sun, the showers, and rich soil, and it will suffer. The same with the child; if certain laws are ignored it will grow up weak and delicate, and the teeth, in such cases, are apt to be in accordance with the body. Ignorance is frequently the cause of suffering. Children are often brought into existence and suffer from the neglect of others, and are deprived of the proper nourishment that nature provides.

A child should have out door exercise, regular baths, and, during the winter months, should be well dressed, so as not to be influenced by the sudden changes. And the most important of all, it should eat suitable food that will build up the system, and thus the present generation can be greatly improved. I have had marked success in this direction in many cases in the past few years. I will simply mention one for illustration. A child three years old was brought under my care for treatment. I found the teeth in a bad condition, the labial surfaces of the superior teeth wasting away, very soft, and sensitive; saliva in an acid condition. I filled the cavities or surfaces with phosphate of zinc. The child had been deprived of suitable food, its diet was principally sweetmeats, and it was in the habit of eating between meals, such as pie, cakes, etc., and at meal time, when the family had substantial food, the child seldom ate. I advised a change of diet, and if piece-meals were necessary, give it substantial food, such as beef, eggs, potatoes, milk, wheat, corn, and Graham bread. The diet was changed at once, and proper exercise was recommended; the child's general health was greatly improved. Two years have passed, the teeth are quite firm and solid in structure, and no doubt all can be preserved till nature sees fit to throw them off to make room for the permanent teeth, which will be improved by strictly following the laws of hygiene.

Medical men might have much influence in this direction if they would turn their attention this way; but they neglect the matter, and it is simply left with us for correction.—*Ohio Journal.*

The Teeth of Europeans are not superior to ours.—Dr. Forbes says that before going to Europe he had heard that the teeth of the people of Europe were much better than in this country, and when he went over there he took pains to observe. He was surprised to find the teeth of the poorer classes much worse than in this country.

I found the same to be true in regard to the slaves in the South, when down there during the war. The assertions of inexperienced persons in regard to such matters are very little to be trusted.—*Dr. J. H. Hyde, Lewiston, Ill.*

HEALTH AND GOOD TEETH VS. CIVILIZATION.

BY GEO. WATT.

The Anglo-Saxons, or English-speaking people live about twelve years longer than they did when I began the practice of medicine; and such a progress in physical development is evidently very far beyond the physical state of health of any savage tribe—teeth or eyes, or anything else. The condition that makes people live long is a condition in the direction of health; in the direction of physical development. And I don't think we find the best organs of any part of the body among the lowest civilized races.

It is a mistake that the Germans have better teeth than we have. The popular notion is that the Germans are the strongest race of people in the world. A gentleman, who will be a member of the State Senate here in a few days, when it is called to order, advanced that idea to me last Monday evening. It was a sort of a friendly fling at temperance that he was making, that, "How is it, if beer drinking is so bad, that the Germans are so much stronger than other people?" But they are the feeblest race of all in the United States, by actual count, unless it be North American Indians. So much the feeblest that the Life Insurance Year Book, for the year 1874, called attention to their feebleness. Of the fifty different nationalities inspected by the provost marshals, with reference to their ability for military service during our late civil war, the Germans stand at the bottom of the scale in health. If we can not take the sworn testimony of the provost marshal's department, take the testimony of any epidemic. Furnishing probably less than one-third the population, the German element furnished more than two-thirds the funerals in Cincinnati during the epidemics of cholera in 1866 and in 1849. My practice has not been very extensive among the Germans, (a few years it was) but I find that they have worse teeth than the Anglo-Saxons.

Among the many fillers in use for porous hard wood this is recommended as one of the best: Stir boiled oil and corn starch into a very thick paste; add a little japan and reduce with turpentine, but add no color for light ash. For dark ash and chestnut use a little raw sienna; for walnut, burnt umber and a slight amount of Venitian red; for bay wood, burnt sienna. In no case use more color than is required to overcome the white appearance of the starch, unless it is wished to stain the wood. The filler is worked with brush and rags in the usual manner. Let it dry forty-eight hours, or until it is in condition to rub down with No. 0 sand paper, without much gumming up, and if an extra fine finish is desired fill again with the same materials, using less oil, but more of japan and turpentine.

THE BASIS OF SCIENTIFIC PROGRESS.

BY J. N. FARRAR, M.D., D.D.S.

[Extracts of paper read before the Brooklyn Dental Society, N. Y.]

The world is full of chaff and tares, and it is not to be wondered at, that, amidst such accumulations of waste matter, the few grains of wheat can only be discovered by the more diligent searchers after truth.

Presuming upon the ignorance of others has too often served as the sounding horn of one's own kingdom.

Although the people of the past often bitterly opposed the investigation of truth, and claimed that the great age of a theory was the highest evidence of its truth, yet this old and weak method has lost ground, and the test of age is not now believed in.

We no longer see, except among barbarians, the physician acting as a magician, no longer does the hexameters from Iliad hang around the neck as an amulet to allay the pain of gout; nor a verse of the Lamentations hang as a locket piece to charm away rheumatism.

Exact records of facts lead to exact reasoning, and exact reasoning undermines hypothetical errors.

To obtain the highest benefit from recorded observations, it is of the utmost importance that they should be accurately made. Many valuable facts are rendered worthless by such a lack of precision and want of clearness in detail.

Every year traditional guesswork, superstition and sublime nonsense are more and more giving way to the simple, unvarnished truth, and sooner or later there will be a generally recognized feeling that the world owes more to men who are lovers of the truth, for the sake of truth and its influences, than to any other class.

Truth is never at variance with itself, though, often, it may at first appear so, if we are to judge from the assertions of some who assume to be, but who in fact are, only partially scientific and also from erroneous conceptions to be ascribed to ignorance upon the part of others, who fail to discriminate between what real scientists say are *facts*, and what are given by them as *hypothesis*.

Experimentally proven facts, correct observations, recorded, tabulated and correlated, form the basis of progress, and have tended to the material elevation of all the sciences to their present grand position.

Honesty in records of this sort is all important. Distorted stories of observations, bigotry, or a wilful desire to deceive in order to sustain some hypothetical notion, are stumbling-blocks that have done vast mischief in retarding the progress of science. Without honest records of facts, no science can be said to have a solid, tangible basis. Indeed, how otherwise are we to arrive at laws?

Go back over the field of history and we will find dentistry grew out of the *business* (not science) of medicine.

It is, however, evident that medicine was then but a trifle more than a bundle of inconsistent "moonshines" and magical nonsense, and that dentistry was also largely made up of the same method of treatment by signs and charms.

I have collated and examined a large number of these, and among them I have found that the paw from the right leg of a rat, hung from a string about the neck of a person, was said to have been a sure cure for toothache on the left side of the mouth, and *vice versa* for the opposite side.

To drink from a skull taken from a grave yard, to take a tooth from a skull and hang it about the neck, to apply the dead tooth to the aching tooth, to carry a double nut in the pocket, to put the parings of finger and toe nails in a piece of paper or in a leaf and burn them, and many other singular absurdities, were said to have been a cure for toothache.

The time will come, as surely as the sun rises and sets, when the scientific dentist, by his own knowledge, will gravitate, not by invitation or permission from them, or by nonsensical "whereas" resolutions, declaring ourselves specialists of M.-D.-ism, but by his own right as a member of the healing body, into any medical college or society. Already the medical schools begin to see and feel, and, indeed, are taking on the chairs in order to supply and fill out the proper curriculum of medical instruction.

College education, however, is not everything. It is but the framework of the house. It remains for us, by careful study, by close observation and masterly workmanlike skill, to complete and adorn the edifice, before we shall attain unto ourselves our highest possibilities; and there is no better road to this than by carefully recording our experience in order to assist the memory in forming conclusions.

For the best good of both dentist and patient, it is not enough to keep merely an accurate financial record of operations. It should cover the pathological and the physiological conditions also.

It is a mistake to suppose that this requires much time. Symbols may be used which mean volumes in a nutshell.

Conclusions based on memory must always be very uncertain, but conclusions arrived at from a study of a long series of *accurate* records of "the ups and downs" of cases, are worth something.

Facts are stubborn things. Men of facts are dreaded by speculators. When a dentist, from tabulated cases covering five or more years, shows the exact per cent of permanent cures of alveolar abscess, for instance, and a certain per cent of the rest reopened in six, twelve, eighteen, twenty-four or thirty-six months, he finds, by comparison, that certain circumstances are common to each class of cases arising from the health of the patient, condition of climate, or the degree of the degen-

eracy of the teeth or sockets involved. He will begin to see the true basis of possibilities, and will be better able to give a correct prognosis.

He may have had some vague ideas of the chances of success before he kept a pathological record, but now he may feel positive, and, upon careful review and comparison of his cases, he can demonstrate to a fraction the true per cent of the various classes of results, and arrive at a knowledge of their causes, by reason of so many recorded facts.

Without accurate records no definite law of average can be obtained. Tabulated facts are everything to the student of science, and to none more so than the dentist.

Everyone who utters remarks in regard to his efforts in our calling, wishes to be believed and appreciated; yet, as in all scientific societies, we find that not all those who speak with the most volubility and assurance are set down as authority by those best qualified to judge.

Dr. S. D. Gross says it requires as much genius to discriminate between the wheat and chaff in medical literature (meaning the monthly and quarterly reports), as it does to diagnosticate disease. Can we not assert that this remark may too often be justly applied to the literature of some of the specialties of medicine?

Every dental society should have, not only a library containing every book and paper of value which it is possible to obtain, but should take especial pains to preserve all of its own, these being of more value than mere minutes of transactions. Above all, it should have a well-regulated place for its collection of teeth, bones, charts, diagrams, statistics, etc. In truth, there is no official department in our societies more important than that of the librarian, which, in connection with that of the secretary, may be made to furnish material of incalculable value, from which data important strides may be made in advancing the status of our science.

The Teeth of Foreigners do not deteriorate by emigrating to this country.—I live near a Swedish settlement and have a good deal to do for them, and I am disposed to question somewhat the statement as to the superiority of the teeth of foreigners who remain in their own country over those who come here. I believe the difference, to a great extent, is only apparent. The attention of most of them has never before been called to their teeth at all, and when it is here, they think these organs are, after coming, much worse than they had been in the old country, but in reality they know very little about it.

They have not been used to dentistry as we have it, and have been in the habit of taking toothache and loss as a matter of course. It is according to my observation that the old Swedes, just over from the fatherland, have as bad or worse mouths than those who have grown up in this country.—*Dr. E. G. Newkirk, Wenona, Ill.*

INFLAMMATION.

BY WM. H. ATKINSON, D.D S., NEW YORK

Swelling, redness, heat and pain have universally been grouped together as the definition of the inflammatory process. Not one has put on record even an approach to legitimate, clear and satisfactory statement of the precise difference between normal nutrient function, and its derangement called inflammation.

Let us examine the process of conversion of pabulum (protoplasm) into the elements of tissue, and learn if we may, that pleasure and pain, health and disease, are qualities or modes, and quantities or measures of functional activities that vanish into each other by disturbing and restoring the balances of regular molecular changes. To comprehend these we must cognize the existence of atoms of which the molecules are composed; and to understand the manner of the coming together of the atoms to construct the molecule, we must take into consideration the state of rest or activity of the atoms, no less than the awakening and engagement of the definite measures of energy that effect the combinations. Why? and how? the molecules move, are the two questions the exact replies to which shall reveal to us the complete explanation of all functional movements, and declare how they are produced and maintained or destroyed in physical bodies.

Pain is the result of obstructed sensory nerve current; *swelling* supervenes upon obstructed blood current; *heat* is the result of obstructions in the nerve and blood channels, by which the mechanical movements of the masses of either become changed into molecular movements which we cognize as *heat.* These three, viz., pain, swelling and heat, are the only essential factors or necessary concomitants in the process of inflammation. The redness that has heretofore been made an equal factor is a mere incident, as is proved by the fact that some swellings are white.

What are we to understand by quality or mode, and quantity or measure of function? And how are we to see the difference between the function of mind and function of body? The function of mind consists of seriated arrestations and releases of the tensions of consciousness, or the power of perception. The functions of body are also seriated successions of arrest and release of tensions of combinations and separations of molecular and atomic bodies, through which the energy operates to produce molecular, granular, corpuscular, tissual, organic and systemic forms of function in their various manifestations.

Late works on chemistry assert that heat is given out or produced by combinations of atoms, and is taken up or quenched by separations of atoms. Works on physics tell us that "heat is a mode of motion," and that "mechanical motion, upon being arrested, is converted into molecular motion, which is heat." How then are we to account for

the heat set free upon the admixture of sulphuric acid and water? How does the friction produce the heat so largely by the mere rushing of the molecules of water among the molecules of acid?

The partially engaged, unsatisfied or sleeping bonds of affinity belonging to the atoms in the molecules of water and acid are in a state to be easily aroused into active motion by an impact of current within the sphere of influence, be it direct or oblique, simple or manifold in its advent. We understand the diffusion of water molecules and acid molecules to result from the desire to attain equi-distance from each other in the mass of fluid; and the rush to acquire that tension effects the awakening of the sleeping bonds of energy, which, being set in motion, manifest the intense measure of heat always attending this experiment.

The difference between this process of disengagement of heat and that form attendant upon the inflammatory process in animal bodies, consists in the greater complications of engagements and disengagements of bonds of affinity in the molecular mass in which these changes occur; and the greater freedom of the fluid in the vessel of the chemist as compared to the confinement of molecular mass in the tissual interspaces of animal organisms. There is also a larger number of elements entering into the molecular mass which is the basis of animal forms of metamorphosis, than in the mass composing the vegetable or mineral examples of molecular aggregations. Hence the increased opportunity for the display of greater varieties of molecular changes that split up and minify the thermal and other currents possible to this limited territory.

There is such a thing as having the receptacle of molecular mass so packed with molecules as to preclude any motion among them. This has been proven by the stoppage of fermentative action by the pressure of a given number of atmospheres. Take the example of a fermentable substance placed in an air-tight transparent vessel, exhaust the air by the air pump, and then inject into the receptacle a quantity of yeast taken from the tub, fresh and active. At first bubbles of carbon-dioxide (carbonic acid gas) will break and rapidly disperse into the vacuum above the yeast, and there being no free oxygen present to support the fermentation, molecular change ceases to appear. Now admit pure oxygen in a small quantity, and then fermentation is again set up with increasing activity, in the ratio of the quantity of oxygen supplied, up to a given measure. So soon as the tension or pressure of the incoming current of oxygen shall interfere with the freedom of the oxygen molecules in the space above the yeast, the activity of the fermentative change gradually lessens by degrees and finally ceases altogether. When the compression of the oxygen is great enough to arrest the motion of oxygen molecules, they assume a static condition, pre-

venting further changes between the oxygen and the hydro-carbons of the yeast. The yeast in the vessel is now in the condition of a "pop-bottle," or a bottle of "mineral water," fully charged with carbon-di-oxide. All that is requisite to re-establish the fermentative activity is to take off the pressure from the gas above the yeast in the vessel by giving it vent, so that the molecules of the oxygen may be free to move among each other again, and the attraction between the oxygen and the carbo-hydrates of the yeast mass is at once set vigorously at work, generating molecules of alcohol and carbon-di-oxide out of the already existing albumen, glucose or diastase in it.

"The whole is equal to all its parts." is an aphorism in the study of inflammation as true as it is in mathematics, astronomy and physics. The combustion of hydrogen and carbon with oxygen is well known to produce heat. Friction also produces heat to the degree of ignition of combustible substances. Are we not then justified in assuming that the heat of fever and inflammation is also the product of combustion and friction? And does not this indicate that whatever prevents or arrests combustion will also arrest fever and the inflammation upon which it depends? The difference between fever and abscess is the difference between the combustion in a charcoal pit and in an open fire. The first extracts the hydrogen from the combustible substance, and leaves the particles of carbon in their undisturbed position in the charcoal or coke; the second oxidizes the carbon and hydrogen, converting them into carbon-di-oxide and water, both of which conspire to change the mineral constituents of the wood or coal into the salts of which their ashes are composed.

If we desire to understand just what fever and inflammation are, we must comprehend the process of combustion. Combustion is the undoing of the work of the sun which constructs mineral, vegetable, and animal tissues. How does this occur? Simply by the influx of an energy that enables the oxygen to disrupt the bonds of affinity which "clamp" the atoms in the molecules; and the formation of other molecules by the use of these "clamps" in a different order of engagement of bonds.

Tensile strength belongs to fluids as well as solids (if not to gases also.) Bubbles on pure water prove the tensile strength of H^2O to be a fact which is more easily displayed by adding soap or other viscous substance to the water, after which bubbles of large size and great strength may be formed, which retain their shape long enough to permit elaborate inspection. Another proof of the tensile force of water may be shown by pouring it from a perforated vessel on a smooth pool, when many spherules will be seen to roll over the face of the placid sheet for some time before melting into its body. It is said a stratum of air intervenes between the drops and the pool—but what enables

each drop to maintain its sphericity if it be not the tensile strength of the water?

The rushing of the molecules of protoplasm under the stress of the inflammatory process has many degrees of rapidity, hence the variety of the so-called products of this process. It may be affirmed that the first degree results in *pus*—a simple, inoffensive body of dead blood, fluid and córpuscular. The second degree is *sanies*—an offensive, decomposing mass of dead blood, evolving sulphurretted hydrogen. The third degree is *ichor*—a yet further disintegration of blood, mixed with dissolved and rotten tissues, soft and hard. All that follows in this disgusting recapitulation (of demoniac possession) is the complete subversion of physiological dominion by chemical control of the elements of flesh and bone.

How do we subdue fire? First, by cutting off the supply of fuel; second, by quenching the flames. How is this last best accomplished? Not by water, unless it be sufficiently abundant to flood the whole body of the combustible on fire, but by enveloping the whole mass in a sheet of carbon-di-oxide or any fluid or vapor having no affinity for oxygen, or into which oxygen does not enter as a constituent. Where the fire is well kindled in an obscure building or a part of a structure, it may be wise to isolate that locality and allow the fire to burn out. Just so in local inflammations in territories that can be cut off, preventing contamination of the whole system, it will be wise to litigate or compress the channels of neural and blood supply, until, by thus establishing physiological rest, the morbific form of metamorphosis is arrested. Afterward normal nutrition may be depended upon to spontaneously take charge of the territory upon the re-entrance of nerve and blood supply.

Paronychia ("run round") which is an acute inflammation, has often been aborted by persistently plunging the finger into lye of wood ashes at the boiling point, dipping it in and out at intervals of a few seconds, until the nerve currents and blood currents were so controlled as to discontinue the pain and swelling.

Whenever this method is vigorously and persistently pursued a rapid cure is attained. Even that terribly painful periosteal inflammation called felon may be aborted, or cut short, by tightly bandaging the finger or thumb.* To be sure some pain may follow this method, but it is better to pursue this course, to bridge the period, even though no anæsthetic be used, than to let it run its own course to full suppuration.

[*Our method is to commence to bandage at a little distance from the felon, with a rubber cord, winding it rapidly till near the felon, then to quickly unravel. This repeated once or twice within five minutes, will generally produce a cure.—Ed.]

Editorial.

THE MAMMALIA.

Five organs distinguish the mammalia from lower animals. 1st, they have a bony skeleton, including a central spine; 2d, a brain composed of two hemispheres; 3d, a heart with two ventricles and two auricles; 4th, two lungs for the inhalation of air for its oxygen and the exhalation of carbonic acid gas and some other impurities; and 5th, a thoracic cavity containing the lungs and the heart, which are always separated from the abdominal cavity by a complete diaphragm. This is the order in which we find more.

They have five senses—seeing, hearing, tasting, smelling and feeling. These are not possessed to the same degree by different mammalia. In most cases one specially predominates. As examples, the lion is keen at sight even in the dark, but poor at hearing; the mole can but poorly see or hear, but, as it roots through the soil, is remarkably keen in its sense of touch; the dog is indifferent in taste, but wonderful in smell. The sense which is specially acute is not developed in the same direction in different species. For instance, take sight. The goat is far-seeing, but indifferent to small objects near by; the hog is near-sighted, seeing very minute objects at the end of his nose, but discerning little at a distance, and the cat sees in comparative darkness. Take the sense of taste: In flesh-eating animals taste is expanded into a voracious appetite, without much discrimination of kind, while in herbivorous animals it is made specially delicate, to distinguish the properties of grasses. They can not only tell the healthful from the poisonous, but those best suited to their various needs and conditions. Thus God has endowed each species with some special instinct to adapt it for its special place and purpose on the earth.

Besides these five senses they have the distinguishing features of organs which acquire great perfection, and have functions superior to anything seen in animals below them. Their eyelids are distinct, they have external ears, which stand out prominently; the mouth is furnished with fleshy lips, and the body is protected with a skin of a complex character.

In the matter of defense each species of these mammalia has its characteristic. The armadillo has no teeth to bite with, but is covered with a coat of mail that is almost proof against attack. The hedgehog and porcupine are weak and defenseless, but they are covered with a multitude of sharp, impregnable quills which they can raise at pleasure, while the body is rolled into a perfect ball. The herbivorous, or grass-

eaters, have poor teeth as a defense from savage carnivorous, or flesh-eating animals, but they have powerful horns. The rodentia, such as the mouse, the squirrel and the beaver, are timid animals, with very little means of defense, but they are cunning at eluding pursuit. The rabbit, the marmot, the rat and the beaver hide in the earth; the squirrel bounds with agility from tree to tree; the kangaroo leaps like the grasshopper, with marvelous irregularity of direction; the llama covers its enemy with a disgusting saliva; the pole-cat throws off an execrable odor; the howling monkey sets up a hideous cry, which frightens its pursuers; and other comparatively defenseless animals mislead their foes by tricks and precautions.

As a rule, the smaller the species the quicker their motion. Before an elephant can turn round a mouse will make a hundred movements; also the smaller animals are stronger in proportion to their weight.

TEACH YOUR CHILDREN INGENIOUSNESS.

Parents, teach your children, both boys and girls, to be ingenious. Teach them from early childhood, and by every possible means to be apt, handy and useful. As much as possible, throw them on their own resources, even though you are almost sure they will spoil their work because of your non-interference. In doing the most simple thing there will often be many failures before there is success. And yet, instead of doing it for them, encourage them to do it for themselves. It is in this way we all grow.

"It wouldn't do to give my children such liberty; they would be marking, and cutting, and spoiling things all the time."

Then give them something of no great value, but with it, an idea to work out. John wants a kite. Instead of making or buying one, give him the sticks, string, paper, paste, and an idea how to construct one. Better still, perhaps, if you let him make the paste and sticks, and experiment till he finds out just its poise, and the amount of tail it wants. Give him time and encouragement, and once in a while a hint, and he will make a kite—they are very poor ones at first, but, as he sees their faults he will correct them, till at kite-making he is an expert; not an inconsiderable attainment.

Mother, Jane wants her doll dressed. Give her the calico and scissors, and needle and thread, with a few hints, and she will make a doll dress; something for you to laugh in your sleeves at, but something she will be more proud of than anything you could have made, and something which will be the beginning of ingenuity and real usefulness. Then Jane wants a cradle for her doll. You can buy it at the toy stores, but her brother John will be proud of making it for her—and a cart to draw it in—if you will give him the tools and materials. You may smile at both the cradle and the cart, but he and his sister will

think them ever so nice. And while Jane has received her first lesson in dress making, John has taken his first lesson in mechanics.

You say you are annoyed by Charles disfiguring the barn door, and marking on the fence, and making all manner of carricatures wherever he can get space to use chalk or charcoal. Well, do you see how it amuses his sister? and how even little Tot tries to do so too? The boys think he is an artist. Instead of being provoked, and trying to suppress their bent to what you call mischief, put a little slate varnish on the nursery wall. To make a fine blackboard of the wall three or four feet high is but little expense, and would be lots of fun for them. Give them different colored crayons to print, and write, and draw pictures with, and take a hand at it yourself.

But don't keep them always at one thing. Have the nursery room fitted up with gymnastic facilities, and for games, and a hundred devices for calling out their ingenuity. Give them an instructor, too, if you can afford it, to direct, amuse and make play wholesome lessons of instruction. Give the boys a little carpenter's shop, too; not with little toy tools which they can only play with, but useful tools that they can work with like real men. See that everything is kept in good order, and that something good comes of your investment.

Of course, all this is more work to you than allowing your children to run loose in the streets. *But it will pay.*

Even this must not be all. Our public teachers should apply the lessons of the text books to something real, tangible and useful. They should mingle theory with practice, and memorizing with the study of living facts. They should see that ideas given are digested and applied to the actualities of everyday life. This ability to apply thoughts and facts to wise purposes is what we call being ingenious, and such children will generally be found efficient, skilled and successful workmen in after life.

BAD WEATHER.

"A bad day."—I do not see it; it seems to me a fine rain. I often wonder how the water gets up there and by what process of nature it is returned to us in such fine drops to bless the earth. Perhaps, also, we do not sufficiently reflect that these rains are essential purifiers of the air and fertilizers of the soil. Each tiny rain-drop, as it passes through the air, makes it his special duty to seize upon every miasmatic spore and upon the carbonic acid gas, which if allowed to accumulate would be so injurious to us, and, thus ladened, it rushes to the earth as though it bore treasures. And so it does. Do you see how green and fresh and beautiful it makes the whole landscape? These very substances, which would have been death to us, are food to vegetation.

"But the atmosphere is so heavy."—O, no; the smoke from the

chimneys descends and the morning fog does not rise, because the atmosphere is light. This air has been forced from a great height to give us oxygen. This will soon take what is detrimental in both smoke and fog and bear them away.

"Cold?"—Would you have it always warm? That would be monotonous. Besides, is there not something invigorating in a good bracing day?

"Just the weather for rheumatism and neuralgias and coughs."—O, no; it is not the weather that brings these. Would it not seem to you inconsistent to wrap in blankets for a hot day; and is it not more inconsistent to dress lightly for such a day as this? Then, too, does not your shivering sometimes indicate that you need this very kind of weather, in which to exercise with a vigor that shall invigorate your whole system? That chilliness would soon give place to a pleasant, healthy glow, with exercise, which would be difficult in hot weather.

"You could get along if it were not for the wind?"—That is the healthiest feature of the day. It divides the molecules of disease germs into atoms and their original gases, so that, while they cannot injure us, the rain can the more easily send them into the soil to invigorate vegetation. My, how it searches in every nook and corner—how it penetrates every putrifying accumulation! How it bursts open the doors of our sick chambers and filthy cellars! All this that it may waft to the regions of ether what would injure us; and there, amid thunderings and lightnings, and mighty tempests, they are dashed into the elements of life and growth.

"And now the sun shines too hot?"—How are you to be suited? We sometimes go a great distance for a sea bath; but a sun bath is quite as healthy in its place. In many sicknesses, if we would remove all our clothing and sit in the sun till our skin was toughened and browned by its rays, we should be benefited more than from all the pills in the doctor's saddle bags. Often, when we feel the languor induced by constant shade, instead of crawling away to a dark chamber to invite greater sluggishness and torpor, if we would come out into the bright, invigorating sunlight and work enough to bring out a profuse perspiration, we should be purified of the very effete matter we have been nursing, and we should receive new life and vigor.

"Finally a pleasant day; ah! but a weather breeder?" Well, well; what can satisfy you? It is either too hot or too cold, too wet or too dry, too dark or too light, and even a pleasant day only comes as a precursor of a storm?

"The climate is too variable?"—This very feature pleases me. If it does not please you, it is easy to find the reverse. The good Lord has provided all sorts of climates. Take your choice, but don't grumble. We have our California and our Maine, our Alaska and our

Florida, our mountains and our plains. Can none of these suit you? May it not be because you have an atmosphere of your own within yourself that is disagreeable? The weather that is around us—both the rain and the sunshine, the cold and the heat—God sends us, and it must all be good. Let us also be good and contented, that we may enjoy it.

Miscellaneous.

RESPIRATION.

BY DR. J. R. LARZELERE.

Respiration takes place not only in the lungs, but in the most intimate portions of the tissues. They themselves do actually breathe, in a chemical sense; thus if a muscle be detached from the body soon after death, and suspended in an oxygenated atmosphere, it will consume oxygen and evolve carbonic acid; this combustion is intensified if the muscle is made to contract. The breathing capacity of the red globule for oxygen depends upon its perfect condition. Oxygen is truly food for the globule, a part of which it assimilates for its own preservation, so also do the muscles and nerve cells; the latter consume largely of oxygen when under strong and continued labor. Individuals of studious habits require a greater amount of oxygen on which the nerve cells may feed.

Compounds of antimony and arsenic, phosphorus, and the salts of soda, and the acids of the bile, are agents which materially change the shape of the globule, and greatly interfere with the performance of its physiological function, as evidenced in the urine, which is found to contain abnormal principles, such as the coloring matters of the bile and albumen.

The researches of Manassein seem to demonstrate the fact that the dimensions of the red globules are least when, from a pathological increase of activity, they are in a condition to give up a large percentage of oxygen, viz., (as in fever) when placed in any condition which increases the difficulty of absorption (as, when under the influence of carbonic acid and morphia). Under other surroundings they increase in size whenever they are brought in contact with any medium which contains a larger amount of oxygen, or, are placed under any circumstances which tend to check the loss of oxygen, as when under the influence of refrigerants, oninia, alcohol, hydrocyanic acid, etc.

The lungs are regarded as the important organs of respiration, but from the prospective light which seems to exist in the near future, may cause us to look upon them as only performing or representing a link in the long chain of respiratory processes, which may commence in the

very depths of the histological elements, and terminate in those surfaces which come in contact with the external medium.

The mechanical phenomena of respiration do not by any means constitute the initial processes of respiration, but simply are the result of a force evolved from the respiratory centre found in the medulla oblongata (bulb) which is transmitted by way of the centrifugal conductors, followed by reciprocal transmissions of efferent impulses, through the centripetal tracts back to medullary bulbs. This great moving centre not only receives and is acted upon by centripetal influences, but is also automatic. This central localle of dynamics is greatly affected by the condition of the blood; the less arterial is the latter, the greater is the activity of the respiratory centre. Any obstruction or hindrance to the ingress of air into the lungs, or if the respiratory activity of the tissues is increased, as during active muscular labor the blood becomes less arterial, more accumulation of carbonic acid, *pari passu* does the respiratory centre become vehement, and its force is eliminated through every available tract, until most of the muscles of the body are made to feel its effects. A marked illustration of a surplus increase of these gases in the blood is attended by diametrical results, as evidenced in the conditions known as apnœa and dyspnœa; the former is induced by the presence of surplus oxygen, while the latter is caused by the increased amount of carbonic acid, which brings us to the conclusion that the activity of the respiratory centre is dependent on the condition of the blood; being quickened when the blood is more venous, and depressed when supplied with surplus oxygen.

That the co-ordinated impulses do descend from the medulla along the efferent nerves, is proved by the fact that the removal or injury of the medulla alone at once stops all respiratory movements, even if a small portion of the medulla, especially that portion which lies below the vaso-motor centre, immediately intervening between which and the calamus scriptorius, is in the least injured, respiration ceases for all time, though every other part of the body be left intact.

The respiratory centre is greatly influenced by extrinsic agents, such as volition, emotion, cold water, and all other outward contact which induces epidermic excitations. However much the character of the centripetal impulses may affect the respiratory centre, it is evident that the centre is endowed with the function of starting efferent impulses de novo

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Our friend, Dr. C. S. Stockton, of Newark, was made Vice President of the American Dental Association at its last meeting. And he was worthy.

WHAT IS DYNAMITE?

BY THE EDITOR OF POPULAR SCIENCE NEWS.

The reports which come to us from England, Russia, Spain, and other countries of Europe, of terrific explosions, by which human life is jeopardized and great damage done to public and private buildings, awaken an intense public interest to learn something of the nature and history of the terrible agent, dynamite, by which the explosions are caused.

If modern chemistry had not placed in the hands of assassins a more powerful explosive agent than gunpowder, the Czar of Russia would probably have been living to-day, and the beautiful Winter Palace at St. Petersburg would not have been what it was in the interior of the north wing—a mass of ruins. The recent explosion in London near the Parliament Houses, could not have so extensively shattered the building, and those contiguous to it, if the conspirators had only gunpowder within reach. Gunpowder is an agent entirely too tame and innocent for the purposes of assassins and political conspirators; it is looked upon by them as about as ineffective and useless as were the old catapults and javelins by warriors of the Middle Ages, after the invention of gunpowder.

In dynamite we have a pasty black mass, almost perfectly safe to handle, of which enough can be carried in a side pocket to destroy the lives of a hundred men if favorably situated, or shatter a building nearly as effectively as could be done with half a barrel of gunpowder placed under it.

The advantage of dynamite to the Nihilist and the political assassin is, that it does not need confinement; a window can be broken in any building, a cartridge thrown in, and the explosive effects are as widespread and disastrous as they would be if the substance were confined in a narrow space with walls which would afford resistance to the expanding gases. A dynamite cartridge may be placed against a building upon the outside, on a sidewalk, and the explosion will cause extensive injury.

What is dynamite? How is it manufactured? We are fully prepared to answer these questions, as we manufactured the first nitro-glycerine ever made in the United States, nearly twenty years ago, and have had some experiences with it not pleasant to recall. Dynamite is simply nitro-glycerine, mixed with an adulterant to render it safe to transport. The added ingredient is usually a fine earth of great absorbent capacity. It has been found that the best kind is the earth which good housewives use to polish their silver with, properly called *infusorial* earth, because it is made up of the fossil remains of minute organisms. Dynamite, then, is a mixture of innocent polishing pow-

der and sweet bland glycerine after it has been acted upon by nitric acid. There is nothing apparently very frightful in this mixture. We can eat glycerine on our puddings and griddle cakes, and grow fat upon it; and a box of silver polish in the house is as harmless as a cake of soap.

In what has been stated a strange law of chemical combination comes into view, a law by which a vast change is produced in innocent bodies by a slight disturbance of their molecular constitution. We disturb the molecular constitution of glycerine by subjecting it to the action of nitric acid, by which nitrogen becomes a constituent of the body, and its whole chemical nature and relationships are changed.

The dull, stupid nitrogen, which exists so abundantly in the air, and which we breathe into our lungs every moment, day and night, becomes the agent which confers upon glycerine the most terrific powers possessed by any agent, save two, known to man. Does not this fact teach an impressive lesson as to the mystery of the forces of nature, and of man's capability of bringing them into action, and, we may say, into subjection? If such facts do not cause a feeling of respect for chemical science, it is difficult to conceive of any that will.

In the manufacture of nitro-glycerine, we simply mix with pure glycerine a certain proportion of sulphuric and nitric acids, and stir the mixture until the reactions occur, which is in about twenty minutes. The vessels must be placed in freezing mixtures, for if at any time the temperature rises above 32° Fahr., decomposition occurs, and if there is no explosion the whole mass goes off in a vast cloud of nitrous acid vapors, which are troublesome and dangerous.

We never ventured to act upon more than one hundred grains of glycerine at a time, and with this small amount the danger was great and accidents were not a few.

Our method was to arrange upon a shelf, in a refrigerating mixture, twelve beaker glasses, each containing one hundred grains of glycerine, and into each of these the mixed acids were slowly allowed to enter, the thermometer being anxiously watched all the time. If the heat from the reactions rose above 32° in any glass, away would go the contents, filling the laboratory so densely with red fumes that no object could be seen six feet distant.

It was regarded as a successful experiment if we saved four glasses out of the dozen. Whilst at present the methods of procedure are not different, the apparatus and appliances are greatly improved. It must be remembered that we were pioneers in the dangerous manufacture, and but little of the product was needed in medicine and the arts. Now, the consumption is enormous, and large manufactories are established in many sections of the country. The United States govern-

ment chemists make the best nitro-glycerine at the laboratory at Newport, Rhode Island. It is used largely for filling torpedoes.

In what has been said we have endeavored to afford a popular view of the chemistry of dynamite. It does not explode at the touch of fire, as does gunpowder, but it must have brought to bear upon it, or in contact with it, another explosive agent, a *fulminate*. A fulminate of mercury is better than a fulminate of silver, for the *rhythm* of its detonation is more in accord with that of the dynamite. Dynamite *detonates*, and does not explode as does gunpowder. Its action is so much quicker than the movements of air, that it strikes against a column of air with the same force as a hammer falling upon a blacksmith's anvil. At another time the chemistry of dynamite explosions will be considered.

WHY ARE WE RIGHT-HANDED?

The reader has no doubt often wondered why people almost invariably use their right hand in preference to their left. Is it not remarkable that, through all time and in all lands, man has been a right-handed being? The individual exceptions only prove the rule. What is the reason? It can not be simply imitation or heredity, for in those children who are disposed to use the left hand these influences will not avail in changing the inclination, even, in many instances, when supplemented by persuasion or force.

In my belief, there is a physical cause for this uniform habit—a cause that is demonstrable by anatomical and physiological facts. These, for the sake of brevity, are expressed in the following statements:

1. The brain (cerebrum) is divided into two hemispheres.

2. The nerve force and nerve fibres which produce muscular action on the one side of the body have their origin in the opposite hemisphere of the brain.

3. The left hemisphere, from the earliest period, is larger and heavier than its counterpart, and the convolutions of gray matter—the reservoirs of nervous energy—are more numerous on this side than on the right.

4. This superior development of the left hemisphere as to weight, size, and richness of convolutions, may be attributed to a peculiar arrangement of the blood vessels, by means of which a greater blood supply is distributed to the brain substance of this side.

5. The arrangement of the blood vessels to which I refer is the manner of origin of the right and left common carotid arteries. The carotid artery is a branch of the innominate artery on the right side, while it springs direct from the aorta on the left.

This directness of communication, in addition to a larger caliber of

the left carotid, gives the left hemisphere a decided advantage in the race of development.

To reverse these statements we would have: as a consequence of the greater capacity of the left carotid the left hemisphere of the brain has a greater blood supply; as a consequence, there is a greater development of the left hemisphere as to weight, bulk, and number of convolutions; as a consequence, when there is need of muscular action, the child naturally uses those muscles which possess the more powerful nerve supply, for muscles are only strong in proportion to their nerve supply; as a consequence, the nervous energy is dispatched, in those cases where there can be a choice, from the left hemisphere; as a consequence, the right hand and right leg will be the more likely used, since this side of the body is innervated by the left hemisphere. Thus, predisposition primarily, and use afterward, influencing and strengthening each other, fix upon us a habit almost unchangeable—how firmly, let those who ever attempted to break the habit in a left-handed boy testify.

But this leads to another question. Why are there left-handed people? We have seen that, as the aorta rises from the heart, it arches from right to left, and the first large artery it gives off is the innominate, which in turn is divided into the right common carotid and right subclavian arteries. Farther on, we find the left common carotid and the left subclavian arteries arising separately from the aorta. Now, in making their dissections, anatomists have found that in a certain proportion of their subjects the aorta arches from left to right, in which cases the innominate is on the left side, and the common carotid and subclavian separate on the right. This arrangement would favor the growth of the right hemisphere, and would predispose to the use of the left hand.

Unfortunately, there have been no *post mortem* examinations made for the purpose of observing whether this arrangement of blood vessels and the use of the left hand really do occur in the same individual, nor is it necessary that it should be found in every case, for there are other anomalies in vessel branching which would favor the growth of the right hemisphere. Apropos of speaking of the preponderance of the right over the left hemisphere, it might not be amiss to mention here that recent investigations have shown this condition of the brain to be characteristic of certain forms of insanity. This does not prove, however, that because a person is left-handed he is necessarily in any degree insane, as some *dexterous* reader may superciliously infer. Now, if the reason of our choice of a hand is due to an organic cause, how unwise is it to fight against nature, unless we commence at the beginning, and trust that habit will overcome the predisposition to the use of the left hand! Undertaken later, the result is often to spoil the

skill of the left hand, without training the right to do its work as well. In conclusion, from what we have seen above, in answer to the question, Why are we right-handed? it might be said, because we are left-headed.—CAHALL, *Popular Scientific Monthly.*

PENNSYLVANIA DENTAL LAW.

EDITOR ITEMS OF INTEREST:—Will you please give your readers, in the September issue, an outline of the new Dental Law requiring dentists to register; also, it seems to me it would be quite an interesting item to have the promoters of the bill to give us, through your columns, the tenor of the bill. Is the bill beneficial to the profession in general, and where and how do the benefits come in? or is it passed in the interest of some clique? Will the public be better served by having this bill become a law? If a country dentist's territory embraces parts of two counties, must he register in both? We do hope the advocates and promoters of the *protective bill* will be kind enough to enlighten the profession in general as to the merits and benefits of this their pet offspring. Please invite them to do so and oblige,

Yours truly, WM. H. WAMPOLE.

[Will not some one who was instrumental in the passage of this act answer our correspondent's questions? Below we give the supplemental act referred to.—ED.]

An act for the registration of dentists, supplementary to the act entitled "An act to regulate the practice of dentistry and to protect the people against empiricism in relation thereto in the State of Pennsylvania, and providing penalties for the same," which became a law on the seventeenth day of April, one thousand eight hundred and seventy-six, providing for the registration of practitioners of dentistry, and penalties for violations of the same.

SEC. 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same: That it shall be the duty of any person practicing dentistry within this commonwealth within three months after the passage of this act, and of any person intending to practice dentistry within this commonwealth, before commencing the same, to have recorded in the recorder's office in the county in which he or she practices or intends to practice, the diploma or certificate provided for in the act to which this supplemented.

SEC. 2. Any person beginning to practice dentistry in this state after the passage of this act, having a dental diploma issued or purporting to have been issued by any college, university, society or association, shall present the same to the State Examining Board provided in the act to which this is a supplement, for approval; such examining board being satisfied as to the qualifications of the applicant and the genuineness of the diploma shall, without fee, indorse the same as approved, after which the same may be recorded as aforesaid.

SEC. 3. Any person who is entitled to practice dentistry in this com-

monwealth without a diploma or certificate under the provisions of the eighth section of the act to which this is a supplement, shall make written affidavit before some person qualified to administer an oath setting forth the time of his continuous practice, and the place or places where such practice was pursued in this commonwealth, and shall within three months after the passage of this act have such affidavit recorded in the recorder's office of the county in which he is practicing, and it shall be the duty of the recorder to record such diplomas, certificates and affidavits, in a book provided for such purpose.

Sec. 4. Any person who shall violate or fail to comply with any of the provisions of this act or the act to which this a supplement, or who shall cause to be recorded any diploma or certificate which has been obtained fraudulently, or is in whole or in part a forgery, or shall make affidavit to any false statement to be recorded as aforesaid, shall be guilty of a misdemeanor, and on conviction shall be sentenced to pay a fine of not less than fifty nor more than two hundred dollars for each offence for the use of the proper county.

Sec. 5. All acts or parts of acts inconsistent herewith are hereby repealed.

Saving teeth should be the first object of the dentist. Even where a patient persists in their extraction, we should refuse to remove them unless we are ourselves convinced their extraction is a necessity. By this course we may lose a few patients, but in the end we shall gain both reputation and patronage.

Gold Alloy.—Dr. W. H. Dorrance prepares gold solder after this manner: Take of pure silver one part, of zinc two parts and of copper three parts. Melt the silver and copper together and add the zinc slowly, in small pieces, allowing all the fumes to pass off. If, after thorough mixing, this is thrown into water, it will separate into small pellets. With these reduce the gold to the proper degree of fineness. If pure gold is used, the number of parts out of twenty-four which are taken will express the fineness of the solder in carats. Twenty parts of gold will make 20-k. solder; sixteen parts, 16-k. solder, etc. If U. S. coin be used, there will be two parts more of alloy, and twenty parts of gold will make but 18-k. solder. After melting it may be run into an ingot, when it will readily roll out into a plate of any desired thickness.

We have used solder made in this manner, and can express our entire satisfaction with it. It bears an excellent color, flows easily and is very strong. We are under obligations to Dr. Dorrance for this formula, as well as for other courtesies.—*Independent Practitioner.*

SEPARATION OF SILVER FROM ALLOYS.

Mr. Solthien describes the following simple method for separating silver from alloys:

The silver-holding alloy or metals are dissolved in the least possible quantity of crude nitric acid. The solution is mixed with a strong excess of ammonia and filtered into a high cylinder, provided with a stopper. A bright strip of copper, long enough to project beyond the liquid, is next introduced, which quickly causes separation of pure metallic silver. The reduction is completed in a short time, and the reduced silver is washed, first with some ammoniacal and then with distilled water.

The more ammoniacal concentrated the solution was, the more rapid is the reduction. The strip of cotton should not be too thin, as it is considerably attacked, and any little particles which might separate from a thin sheet would contaminate the silver.

The operation is so simple that it seems preferable to all others for such operations as the preparation of nitric of silver from old coins, etc. Any accompanying gold remains behind during the treatment of the metal or alloy with nitric acid, chloride of silver (produced by the impurities [H C I] in the nitric acid) is taken by the ammoniacal solution, like the copper, and is also reduced to the metallic state; and whatever other metal was not left behind, oxodized by the nitric acid, is separated as hydrate (as lead, bismuth) on treating with ammonia. Any arsenate which may have passed into the ammoniacal solution is not decomposed by the copper.—*Arch. d. Pharm.*

THE NASCENT STATE OF CHEMICAL REAGENTS.

Some, for want of due information, fail to know exactly what is meant by the nascent state of a chemical agent. The derivation of the adjective indicates that the state of being born, or formed, or liberated, so as to be thoroughly individualized, is the idea to be attached to a chemical body said to be in the nascent state. Perhaps the meaning can be gained by illustration more readily than by definition. Take a simple case: When charcoal is burned, oxygen unites with the carbon, and carbonic acid is the result. In its state of formation, by the union of its components, it is said to be nascent. On the other hand, chalk or marble is lime in combination with carbonic acid. If to the chalk or marble sulphuric acid is added, the carbonic acid is liberated, and in its liberation is also nascent, and has the same chemical peculiarities as when so rendered by the first mentioned process. It is universally recognized by chemists, that chemical reagents are more energetic in the nascent state; that is, their affinity for other matter is stronger.—*Ed. Ohio State Journal.*

Overwork at Colleges.—E. D. Swain, of Chicago, says: I find that sixty hours each week are given to the college. Fifteen lectures, which occupy twenty hours of the time; the other forty are to be divided between infirmary practice, clinics, mechanical dentistry, dissecting and laboratory work. This, understand, is in the purely dental college, and is twenty-four hours more time per week than is required of students in most other institutions of learning. In fact, a graduate from Ann Arbor University (but not in dentistry) informed me that it was admitted in all departments that more was required of the dental students in that institution than from any of the others. If the above calculation be correct, the student is compelled to spend ten hours per day in the class rooms, and in order to be prepared for the following day must study nights and Sundays. It may be argued that much of this time is devoted to listening to lectures, preparation for which is unnecessary; and judging from some specimen graduates which the writer has had the pleasure of meeting, I should judge the argument had been practically carried out.

[While attending college ourself, to keep up with our classes "honorably" we spent sixteen hours in study and attendance on lectures each day. Of course, this was too much. No wonder many are broken down. As a student said to us the other day, "It is cramming."]

Alcohol from Smoke.—The latest instance of the utilization of waste products is that effected at Elk Rapids, Mich., with the gaseous matter given forth by a blast furnace in which are manufactured 50 tons of charcoal iron per day. In the case to which we refer, the vast amount of smoke from the pits formerly lost in air is now turned to account by being driven by suction or draught into stills surrounded by cold water, the result of the condensation being, first, acetate of lime; second, methyl alcohol; third, tar; the fourth part produces gas, which is consumed under the boilers. Each cord of wood produces 29,000 cubic feet of smoke; 2,900,000 feet of smoke handled every 24 hours, producing 12,000 pounds of acetate of lime, 200 gallons of alcohol, 25 pounds of tar.—*Stearns' New Idea.*

July 10, 1883.

As paper is now manufactured into a variety of useful articles, could it not be adapted to dentistry by making our impression cups of it. It would be cheap and cleanly. Make them in such a manner that the expense will be so trifling that a new cup can be used for each case. Britannia cups are so dingy and hard to keep clean, after using a few times. I think it is practical to use paper for this purpose, and have for a year or more. Think it over, and if you can make them.

MEETINGS OF DENTAL SOCIETIES.

Of Maryland D. C., at Washington, D. C., second Tuesday in October. Dr. B. F. Cory, of Baltimore, Pres. Dr. M. W. Foster, Sec'y.

Of North Carolina, at Raleigh, first Wednesday in September. Dr. V. E. Turner, Pres. Dr. D. A. Robinson, Sec'y.

Of Ohio, at Columbus, first Wednesday in October. Dr. J. W. Lyder, Akron, Pres. Dr. J. H. Warner, Columbus, Sec'y.

American Dental Convention, at Saratoga Springs, August 14th.

The Central Illinois Dental Society will hold its second annual meeting at El Paso, Ill., on the second Tuesday (9th) of October, at which the following program will be had:

1.	Pre-natal Influences as Affecting the Teeth	Dr. Geo. H. Cushing, Chicago.
2.	Bacteria	Dr. E. D. Swain, "
3.	Alveotitis	Dr. A. W. Harlan, "
4.	Dentistry and its present status	Dr. K. B. Davis, Springfield.
5.	Theories	Dr. W. A. Johnson, Peoria.
6.	Filling Root Canals	Dr. C. W. Spaulding, St. Louis, Mo.
7.	The Higher Education	Dr. J. D. Moody, Mendata.

There will be a three days' session. Meeting will be held in the City Hall. Hotel rates $1.50 per day, at the Campbell House.

C. R. TAYLOR, Sec'y.

Have something definite to do for leisure hours. An idle brain is the devil's workshop, but there is no room for his satanic majesty in a brain thoroughly and usefully occupied. While the lazy man has time he does not know what to do with, and which needs various dissipations to consume, the man of industry hardly knows what leisure means and little disposition for anything not useful. We all have odd hours to be occupied by something. If it is "anything that first comes to hand," the habit of indifference, and finally of recklessness, will drift us where we know not. For "satan finds some mischief still for idle hands to do."

To have some definite, absorbing study or labor for these odd times not only keeps us out of mischief, but is the making of us. The maxim that "Where there is a will there is a way" is as true as it is old. "Necessity is the mother of invention." When that necessity is an irrepressible thought which forces us to occupy every spare moment, it is wonderful to see how much will be accomplished. We become learned and skilled in anything that we have an unconquering determination to accomplish. It breaks down all barriers of poverty and ignorance, and in spite of everything raises us to eminence and success.